MONONGAHELA RAILROAD, NEW GENEVA BRIDGE
Pennsylvania Historic Railroad Bridges Recording Project
Spanning Monongahela River, south of Lock & Dam No. 7
New Geneva vic.
Fayette County
Pennsylvania

HAER No. PA-528

PHOTOGRAPHS

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
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HISTORIC AMERICAN ENGINEERING RECORD

MONONGAHELA RAILROAD, NEW GENEVA BRIDGE

HAER No. PA-528

Location:	Spanning Monongahela River, south of Lock & Dam No. 7, between New Geneva vicinity, Fayette County, and Mable Hill, Greene County, Pennsylvania.
USGS Quadrangle:	Masontown, Pennsylvania (7.5-minute series).
UTM Coordinates:	17/591210/4403775
Date of Construction:	1912-13.
Basis for Dating:	Secondary sources.
Designer:	J. C. Bland (Engineer of Bridges, Pennsylvania Lines West).
Fabricator / Builder:	American Bridge Co. (Ambridge, Pa.).
Present Owner:	Norfolk Southern Railroad.
Present Use:	Railroad bridge.
Significance:	The Monongahela Railroad's bridge at New Geneva is significant for its long Petit through truss, and more importantly, for its erection by end launching. At the time of its construction, it was the longest and heaviest single span yet built by that method.
Structure Types:	Pin-connected Petit through truss; riveted deck girder.
Historian:	Justin M. Spivey, April 2000.
Project Information:	The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric N. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and Museum Commission (PHMC). Justin M. Spivey, HAER engineer, researched and wrote the final reports. Preston M. Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and

Joseph E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

An editorial in *Engineering Record* lauded the Monongahela Railroad for its ambitious erection of an 1800-ton truss by end launching. This method, unusual for such a large truss, reduced the amount of permanent falsework in the river by erecting the main span on one approach, then moving it by barge into its final position. Because of an "extremely high flood" that occurred during erection, the railroad merited additional praise.[1]

The bridge at New Geneva, first on this site, carried a new extension of the Monongahela Railroad as it switched from the east bank to the west bank of the Monongahela River on its way to the West Virginia state line. The Pittsburgh & Lake Erie Railroad (P&LE) and Pennsylvania Railroad (PRR) jointly owned the line, the main purpose of which was to retrieve coal for Pittsburgh's steel industry. The Monongahela Railroad, incorporated 31 December 1900, completed its main line from West Brownsville Junction to Martin (just downstream from New Geneva) by 1903. The State Line extension connected with the Buckhannon & Northern Railroad to Fairmont, and on 1 July 1915, the two companies merged to form the Monongahela Railway.[2]

The bridge cleared regulatory hurdles in early 1910, but debate over its design consumed the better part of 1911.[3] The alignment established by a survey several years previous was revised to permit a main span of 470'-0", shorter than the 550'-0" originally considered.[4] Samuel Rea, then PRR Vice President, anticipated that the new single-track line would eventually carry enough traffic to warrant a second track. Rea's suggestion inspired a flurry of correspondence between engineers and managers about whether to build foundations, piers, and superstructure for one track or two. Monongahela Railroad President J. M. Schoonmaker even suggested double-track piers with a superstructure "sufficiently wide to gauntlet," whereby two opposing tracks would have shared a common rail over the bridge.[5] The final decision was for a single-track superstructure on double-track piers, a configuration that still exists as of this writing.

PRR's Lines West organization had responsibility for the bridge's design, which Chief Engineer J. C. Bland supervised. The American Bridge Co.'s Ambridge plant fabricated and erected the spans. Because of its location at a bend in the river, the bridge's piers are skewed about 15 degrees to its axis. In addition to the 475'-0" Petit through truss over the main channel, the bridge has five 95'-0" deck plate girders spans, three on the west side and two on the east.[6] The truss and girders are single-track structures, placed on the south side of the double-track piers. American Bridge placed temporary girder spans on the north side of the west approach piers, on which the main span was erected, except for two panel points supported by falsework in the river.[7] When erection was complete, the south end of the span was transferred to wooden scaffolding on a barge, which then carried it across the river to the opposite pier. The truss rolled along the north approach on trucks that incorporated modified turntable centers.[8] Once in place

over both piers, it was shifted 11'-6" transversely and lowered 12'-0" into final position. At the time, it was the longest and heaviest single span placed by this method.[9]

Unfortunately, a record-setting flood complicated the Monongahela Railroad's record-setting bridge erection. As the south end of the completed truss sat on the barge in July 1912, ready to be floated across, "two very high floods were encountered, in one of which the water rose 26 ft. above the normal stage, and in the other it rose 29 ft. in six hours," the latter of which set a record. This description appeared in *Railway Age Gazette,* along with a photograph of the truss tilted upward because of the barge rising beneath it. Emergency work prevented permanent damage to the span, however, and it was carried across the river on 30 July. Although the engineers had planned to use the barge in lowering the truss onto its bearings, they decided to avoid the risk of another flood by using jacks instead.[10] The bridge was completed in early 1913.

Notes

1. "Difficult Bridge Erection," *Engineering Record* 67, No. 17 (26 Apr. 1913): 453.

2. Thomas T. Taber III, *Railroads of Pennsylvania: Encyclopedia and Atlas* (Muncy, Pa.: Thomas T. Taber III, 1987), 347; also Howard W. Schotter, *The Growth and Development of the Pennsylvania Railroad Company: A Review of the Charter and Annual Reports of the Pennsylvania Railroad Company 1846 to 1926* (Philadelphia: Press of Allen, Lane, and Scott, 1927), 280-1, 342-3.

3. U.S. War Department, Corps of Engineers, *List of Bridges over Navigable Waters of the United States* (Washington, D.C.: U.S. Government Printing Office, 1936), 334-5, indicates that Congress authorized the bridge's construction on 27 Jan. 1910.

4. H. C. Booz, Assistant Chief Engineer, Pennsylvania Railroad, to Samuel Rea, Vice President, 13 Mar. 1911. New Geneva, Pa. - Proposed Monongahela River Bridge 1911 folder, Box 1459, Chief Engineer, Engineering Department, Pennsylvania Railroad Company, Acc. 1807, Hagley Museum and Library, Greenville, Del. [hereinafter cited as Correspondence].

5. J. M. Schoonmaker, President, Monongahela Railroad Co., to Joseph Wood, Vice President, 17 Mar. 1911, Correspondence.

6. "Erection of Monongahela River Bridge," *Railway Age Gazette* 54, No. 3 (17 Jan. 1913): 95-8.

7. "Erecting the New Geneva Bridge," *Engineering Record* 67, No. 17 (26 Apr. 1913): 456-60.

8. Photographs in the collection of David E. Gratz, P.E., Rail Transportation Consultant, Brownsville, Pa., describe this process. Gratz, to author, 5 Feb. 2000. Gratz was once Superintendent of the Monongahela Railway, successor to the Monongahela Railroad.

9. "Bridge Erection by End Launching," *Railway Age Gazette* 54, No. 3 (17 Jan. 1913): 91-2.

10. *Railway Age Gazette*, "Erecting the New Geneva Bridge," 98. A photograph in the Gratz collection shows a picnic celebrating the truss's arrival at the south pier.

Acknowledgment

The author is grateful to David E. Gratz, P.E., Rail Transportation Consultant, for identifying sources for this report.

Additional Source

1. Milepost 30.26, region/division/branch 408001, aperture card files, Consolidated Rail Corp., Philadelphia, Pa. [transferred to Norfolk Southern Railway Co., Atlanta, Ga.].